II. AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Previously presented) A method of forming a gas dielectric structure for a semiconductor structure, the method comprising the steps of:

forming an opening for semiconductor structure in a dielectric layer on a substrate;

depositing a sacrificial layer over the opening such that the sacrificial layer fails to substantially fill the opening;

performing a directional etch on the sacrificial layer to form a sacrificial layer sidewall on the opening after depositing the sacrificial layer;

depositing a conductive liner over the opening after performing the directional etch;

depositing a metal in the opening after depositing the conductive liner;

planarizing the metal and the conductive liner after depositing the metal;

removing the sacrificial layer sidewall after the metal and the conductive liner are planarized, forming a void; and

depositing a cap layer over the void to form the gas dielectric structure.

2. (Original) The method of claim 1, wherein the opening includes at least one wiring line opening and at least one via.

3. (Original) The method of claim 2, wherein the void extends along a side of the at least one via.

4. (Original) The method of claim 1, wherein the forming step includes performing a dual damascene process.

5. (Original) The method of claim 1, wherein the forming step includes depositing a hard mask, patterning the hard mask and etching the hard mask.

6. (Original) The method of claim 1, further comprising the step of depositing a non-conductive liner prior to the step of depositing the sacrificial layer.

7. (Original) The method of claim 1, wherein the conductive liner includes at least one of the group consisting of: tantalum (Ta), tantalum nitride (TaN), titanium (Ti), titanium nitride (TiN), tungsten (W) and niobium (Nb).

8. (Original) The method of claim 1, wherein the sacrificial layer includes one of the group consisting of: aluminum (Al), silicon dioxide (SiO_2) and titanium (Ti).

9. (Original) The method of claim 1, wherein the removing step includes etching the sacrificial sidewall layer using one of: a) water (H_2O) and sodium hydroxide (NaOH); b) water (H_2O) and hydrofluoric acid (HF); and c) hydrofluoric acid (HF) and hydrochloric acid (HCl).

10. (Original) The method of claim 9, wherein in the case that water (H_2O) and sodium hydroxide (NaOH) are used as an etchant, the ratio of H_2O to NaOH is no greater than approximately 10:1 and no less than 1:1.

11. (Previously presented) A method of forming a gas dielectric structure for a semiconductor structure, the method comprising the steps of:

performing a dual damascene process to form an opening including at least one wiring opening and at least one via in a dielectric layer on a substrate;

depositing a sacrificial layer over the opening;

performing a directional etch on the sacrificial layer to form a sacrificial layer sidewall wherein the directional etching removes the sacrificial layer only from substantially horizontal surfaces;

depositing a conductive liner over the opening after performing the directional etch;

depositing a metal in the opening after depositing the conductive liner;

planarizing the metal and the conductive liner after depositing the metal;

removing the sacrificial layer sidewall after the metal and the conductive liner are planarized, forming a void; and

depositing a cap layer over the void to form the gas dielectric structure.

12. (Original) The method of claim 11, wherein the void extends along a side of the at least one via.

13. (Original) The method of claim 11, wherein the forming step includes depositing a hard mask, patterning the hard mask and etching the hard mask.

14. (Original) The method of claim 11, further comprising the step of depositing a non-conductive liner prior to the step of depositing the sacrificial layer, wherein the non-conductive liner includes one of the group consisting of: silicon nitride (Si_3N_4) and silicon dioxide (SiO_2).

15. (Original) The method of claim 11, wherein the conductive liner includes at least one of the group consisting of: tantalum (Ta), tantalum nitride (TaN), titanium (Ti), titanium nitride (TiN), tungsten (W) and niobium (Nb).

16. (Original) The method of claim 11, wherein the sacrificial layer includes one of the group consisting of: aluminum (Al), silicon dioxide (SiO_2) and titanium (Ti).

17. (Previously presented) A method of forming a gas dielectric structure for a semiconductor structure, the method comprising the steps of:

performing a via-first dual damascene process to form an opening including at least one wiring opening and at least one via in a dielectric layer on a substrate;

depositing a sacrificial layer over the opening such that the sacrificial layer fails to substantially fill the opening;

performing a directional etch on the sacrificial layer to form a sacrificial layer sidewall, wherein the directional etching removes the sacrificial layer only from substantially horizontal surfaces;

depositing a conductive liner over the opening after performing the directional etch;

depositing a metal in the opening after depositing the conductive liner;

planarizing the metal and the conductive liner after depositing the metal;

removing the sacrificial layer sidewall after the metal and conductive liner are planarized, forming a void that extends along a side of the at least one via; and

depositing a cap layer over the void to form the gas dielectric structure.

18. (Original) The method of claim 17, further comprising the step of depositing a non-conductive liner prior to the step of depositing the sacrificial layer, wherein the non-conductive liner includes one of the group consisting of: silicon nitride (Si_3N_4) and silicon dioxide (SiO_2).

19. (Original) The method of claim 17, wherein the conductive liner includes one of the group consisting of: tantalum (Ta), tantalum nitride (TaN), titanium (Ti), titantium nitride (TiN), tungsten (W) and niobium (Nb).

20. (Original) The method of claim 17, wherein the sacrificial layer includes one of the group consisting of: aluminum (Al), silicon dioxide (SiO_2) and titanium (Ti).